

# DECEMBER 31, 2015 ACTUARIAL VALUATION OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

July 29, 2016 PERS Board Meeting

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*Revised July 27, 2016*



# Introduction

- Today we will review summary valuation results for the Tier 1/Tier 2 & OPSRP retirement programs and the Retiree Health Insurance Account (RHIA) and Retiree Health Insurance Premium Account (RHIPA) programs
  - Formal, detailed results will be presented in our forthcoming December 31, 2015 System-Wide Actuarial Valuation Report, which will be issued in late September or early October
- This valuation will be the basis for adoption of 2017-2019 employer contribution rates at the September 30, 2016 Board meeting
  - Employers' rates will be in the September meeting's materials
- Shortly after that meeting, we will provide PERS staff with detailed reports for each employer
- PERS will deliver those reports to employers

# Valuation Process and Timeline

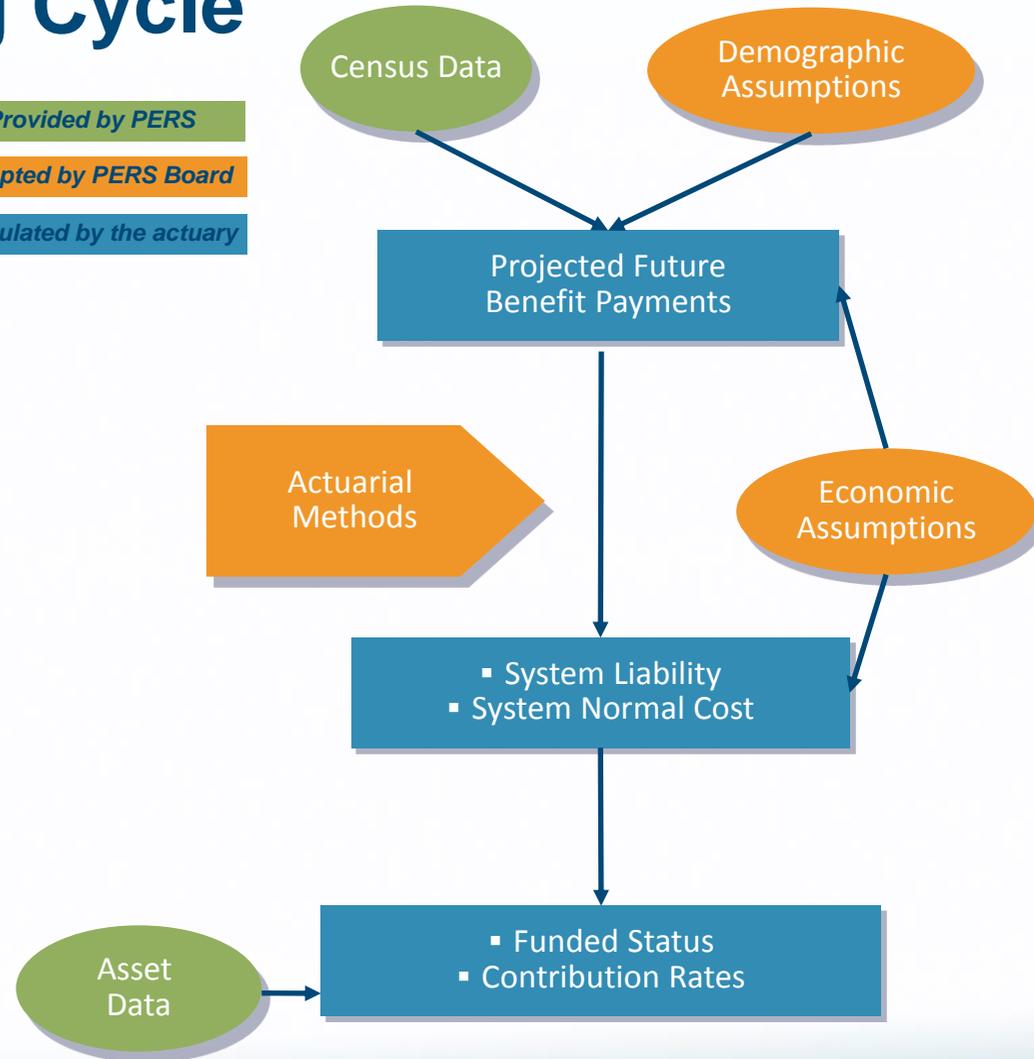
- Actuarial valuations are conducted annually
  - Alternate between “rate-setting” and “advisory” valuations
  - The 12/31/2015 valuation is rate-setting
- The Board adopts employer contribution rates developed in rate-setting valuations, and those rates go into effect 18 months subsequent to the valuation date

Valuation Date	Employer Contribution Rates
12/31/2013	July 2015 – June 2017
12/31/2015	July 2017 – June 2019

# Two-Year Rate-Setting Cycle

- **July 2015:** Assumptions and methods endorsed by Board in consultation with the actuary
- **September 2015:** System-wide 12/31/14 “advisory” actuarial valuation results reported
- **November 2015:** “Advisory” 2017-2019 employer-specific contribution rates distributed
- **July 2016:** System-wide 12/31/15 “rate-setting” actuarial valuation results
- **September 2016:** Adoption of employer-specific 2017-2019 contribution rates

Provided by PERS  
 Adopted by PERS Board  
 Calculated by the actuary



# Guiding Principles

- In setting rates, the PERS Board has identified the following guiding principles:
  - Transparent
  - Predictable and stable rates
  - Protect funded status
  - Equitable across generations
  - Actuarially sound
  - GASB compliant
- Tension exists between some of the goals (e.g. stability of rates and protecting funded status)
  - Balancing the competing priorities is important to the policy decisions surrounding the rate-setting cycle

# Changes Since the Last Rate-Setting Valuation

- The 12/31/2013 rate-setting actuarial valuation developed 2015-2017 contribution rates
  - That rate-setting valuation reflected legislative changes (SB 822 & 861) lowering projected benefits
- Since the 12/31/2013 rate-setting valuation:
  - *Moro* decision overturned a significant portion of the legislative changes
  - PERS Board adopted new assumptions and methods from the 2014 Experience Study, including lowering investment return assumption to 7.50% and increasing assumed retiree life expectancy
  - Cumulative 2014 and 2015 asset returns were less than assumed, generating approximately a \$2.8 billion actuarial investment loss over the biennium, with \$2.6 billion of that loss occurring in 2015

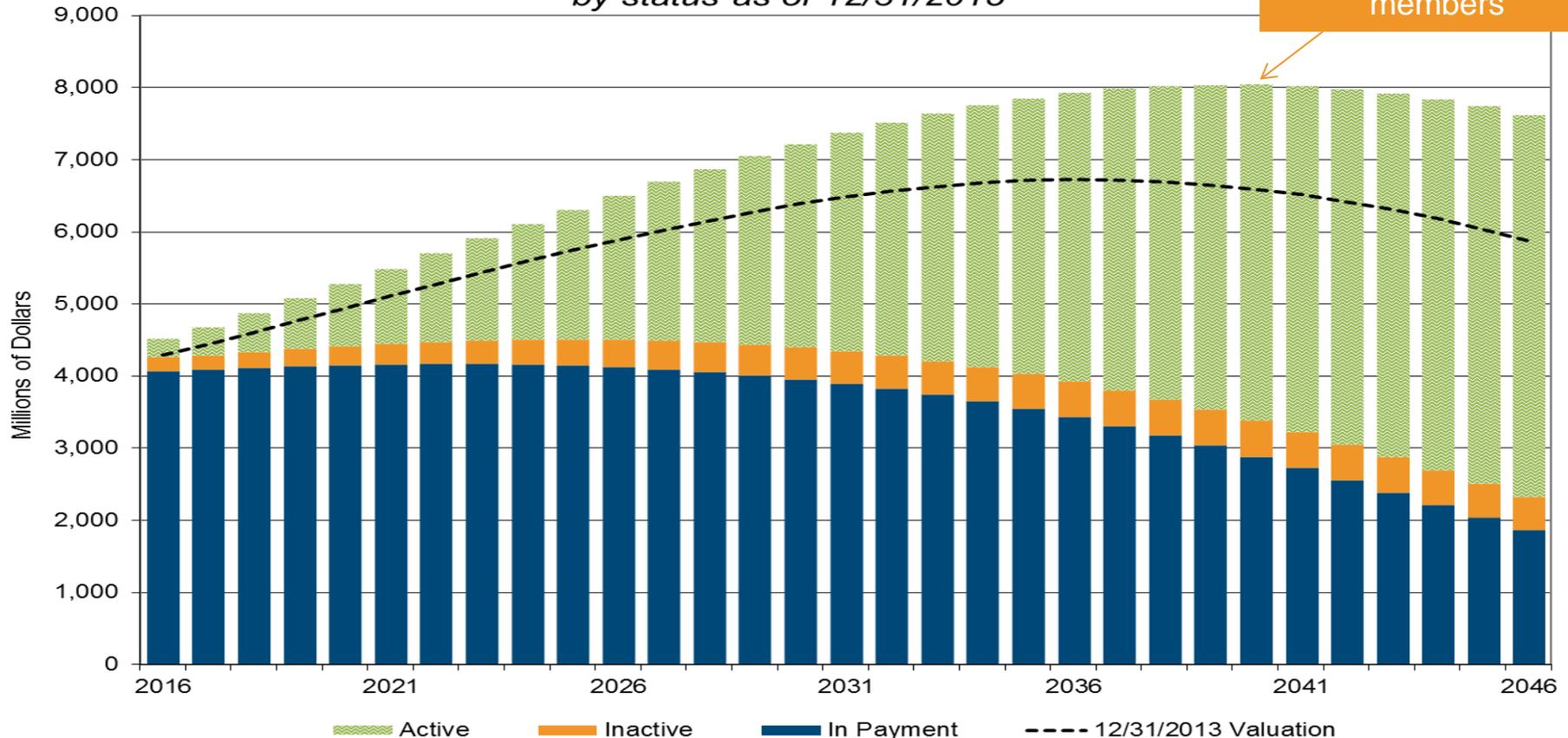
# Changes Since the Last Advisory Valuation

- The 12/31/2014 advisory actuarial valuation developed advisory 2017-2019 rates and reflected:
  - *Moro* decision - \$5.1 billion increase in Unfunded Actuarial Liability (UAL)
  - Updated investment return and mortality assumptions from the 2014 Experience Study - \$3.5 billion increase in UAL
  - The \$0.2 billion actuarial investment loss during 2014
- The 12/31/2015 rate-setting valuation develops final 2017-2019 rates and reflects the 2015 actuarial investment loss of \$2.6 billion
  - Long-term rate projections presented in November 2015 used actual investment results through October 2015 and thus illustrated most of the 2015 actuarial investment loss

# Projected Benefit Payments

Tier 1/Tier 2 & OPSRP Expected Benefit Payments  
by status as of 12/31/2015

By 2040, projected to be \$8 billion in benefit payments to current members



The dotted line depicts the projected payments from the 12/31/2013 rate-setting valuation, which did not reflect the *Moro* decision

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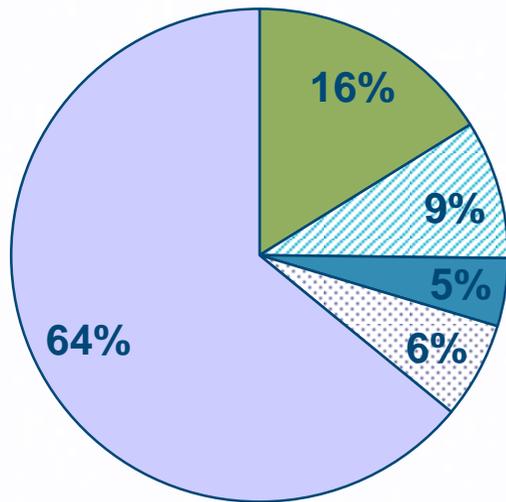
# Funded Status & Unfunded Actuarial Liability (UAL)

System-total Pension Funded Status (\$ billions)			
<i>Reflects:</i>	12/31/2013	12/31/2014	12/31/2015
<i>Moro decision?</i>	No	Yes	Yes
<i>2014 Experience Study assumptions?</i>	No	Yes	Yes
Actuarial liability	\$62.6	\$73.5	\$76.2
Assets (excluding side accounts)	<u>\$54.1</u>	<u>\$55.5</u>	<u>\$54.4</u>
UAL (excluding side accounts)	\$8.5	\$18.0	\$21.8
Funded status (excluding side accounts)	86%	76%	71%
Side account assets	<u>\$5.9</u>	<u>\$5.9</u>	<u>\$5.6</u>
UAL (including side accounts)	\$2.6	\$12.1	\$16.2
Funded status (including side accounts)	96%	84%	79%

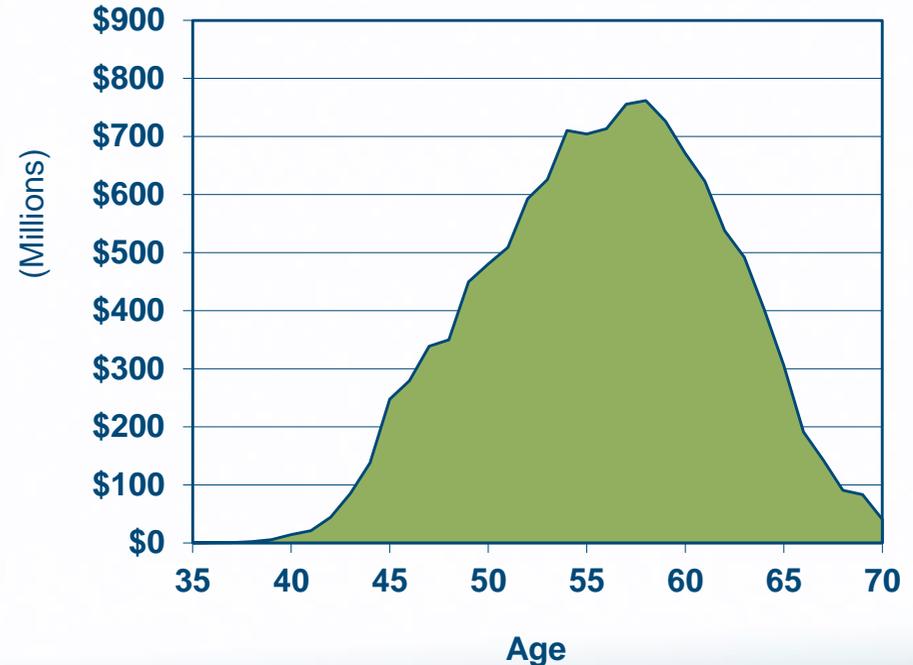
# Division of Actuarial Liability by Category

12/31/2015 Tier 1/Tier 2 and OPSRP Actuarial Liability

## Actuarial Liability by Member Category



## Age Distribution of Tier 1 Actives Liability



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# Sources of 2015 UAL Increase

(\$ billions)	UAL Increase
Expected UAL increase/(decrease) during 2015	\$0.9
2015 actual investment performance below assumption	\$2.6
Actual demographic experience different than assumed	<u>\$0.3</u>
Total	\$3.8

- The expected UAL increase/(decrease) is the change, based on 12/31/2014 valuation results, projected to occur during 2015 due to the effects of temporary negative amortization
- The 2015 actuarial investment loss reflects actual OPERF returns of approximately 2% compared to the assumed 7.50% return
- The largest source of liability variation during 2015 was that observed retiree mortality was different than assumed
- The above increase is in addition to the \$9.5 billion UAL increase during 2014, which was driven by *Moro* and assumption changes

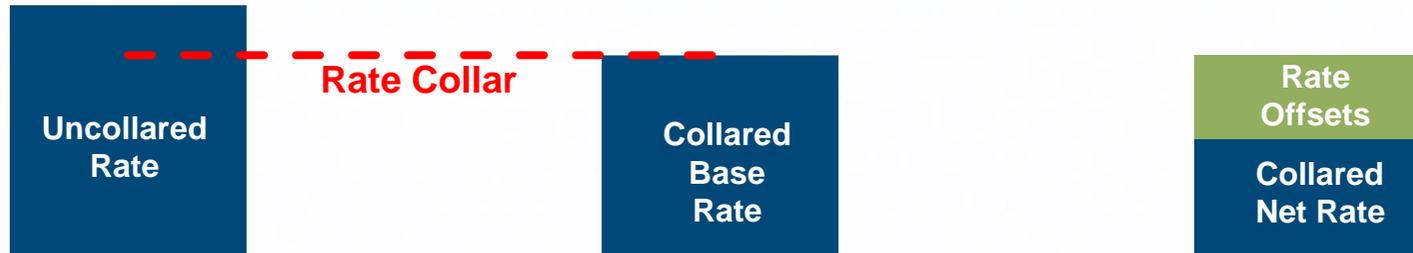
# Tier 1/Tier 2 Rate Pool Funded Status and UAL

- Funded status differs for the two large Tier 1/Tier 2 rate pools

(\$ billions)	SLGRP	School Districts
Actuarial liability	\$38.4	\$27.7
Assets (excluding side accounts)	<u>\$27.7</u>	<u>\$19.7</u>
UAL (excluding side accounts)	\$10.7	\$8.0
Funded status (excluding side accounts)	72%	71%
Projected 2016 payroll	\$5.6	\$3.1
Ratio of UAL to payroll	192%	261%
Side account assets	\$2.5	\$3.0
UAL (including side accounts)	\$8.2	\$5.0
Funded status (including side accounts)	79%	82%

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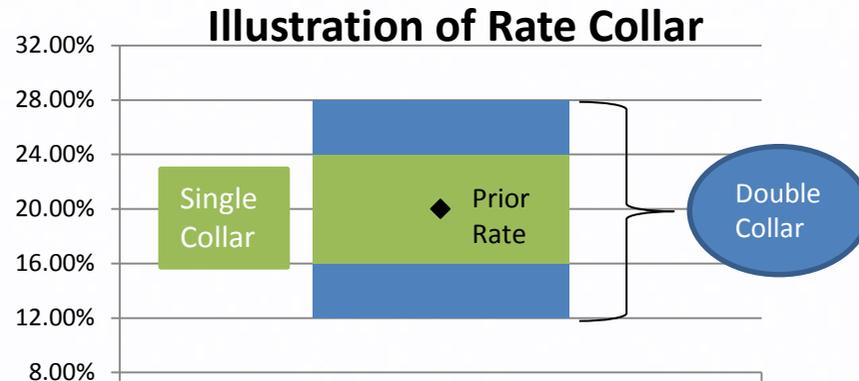
# Overview of Rate Calculation Structure



- The uncollared rate is the theoretical contribution rate to reach 100% funded status over a specified amortization period if:
  - Contributions at that rate started on the actuarial valuation date, and
  - Actual future experience mirrors the actuarial valuation's assumptions
- The rate collar sets a biennium's base rate, limiting the base rate change when there is a large change in the uncollared rate
- Employers pay the net rate, which can differ from the base rate due to adjustments that fall into two major categories
  - Side account rate offsets for employers with side accounts
  - SLGRP charges/offsets (e.g., Transition Liability/Surplus)

# Current Rate Collar Design

- The maximum change typically permitted by the collar is:
  - 20% of the rate currently in effect (3% of payroll minimum collar width)
- If funded status is 60% or lower, the width of the collar doubles
  - 40% of rate currently in effect (6% of payroll minimum collar width)
- If the funded status is between 60% and 70%, the collar size is pro-rated between the initial collar and double collar level



- Collars are calculated at a rate pool level and limit the biennium to biennium increase in the UAL Rate for a given rate pool

# Comments on 2017 – 2019 Rates

- No single employer pays the system-wide average rate
  - School district base rates are above the average
  - Most SLGRP employers' base rates are below the average
- Employers in a rate pool do not pay the pool average rate
  - Actual rates reflect employer-specific side account rate offsets and/or any SLGRP charges/offsets
  - SLGRP normal cost rates are specific to an employer's composition of member tier and job classification
- Rates shown do not include the effects of:
  - Individual Account Plan (IAP) contributions
  - Rates for the RHIA & RHIPA retiree healthcare programs
  - Debt service payments on pension obligation bonds

# Uncollared Pension Rates – School Districts

Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

	12/31/2013 2015 - 2017 Final			12/31/2015 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
Normal Cost	11.94%	7.33%	10.14%	13.28%	8.02%	10.73%
Tier 1/Tier 2 UAL	9.25%	9.25%	9.25%	19.63%	19.63%	19.63%
OPSRP UAL	0.61%	0.61%	0.61%	1.27%	1.27%	1.27%
<b>Uncollared Rate</b>	<b>21.80%</b>	<b>17.19%</b>	<b>20.00%</b>	<b>34.18%</b>	<b>28.92%</b>	<b>31.63%</b>
<b>Increase</b>				<b>12.38%</b>	<b>11.73%</b>	<b>11.63%</b>

*The pool-average collared base and net rates for 2017-2019 are shown on subsequent slides*

<sup>1</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.

# Collared Pension Base Rates – School Districts

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2013 2015 - 2017 Final			12/31/2015 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
<b>Uncollared Rate</b>	<b>21.80%</b>	<b>17.19%</b>	<b>20.00%</b>	<b>34.18%</b>	<b>28.92%</b>	<b>31.63%</b>
Collar Limitation	(0.00%)	(0.00%)	(0.00%)	(7.48%)	(7.48%)	(7.48%)
<b>Collared Base Rate</b>	<b>21.80%</b>	<b>17.19%</b>	<b>20.00%</b>	<b>26.70%</b>	<b>21.44%</b>	<b>24.15%</b>
<b>Increase</b>				<b>4.90%</b>	<b>4.25%</b>	<b>4.15%</b>

*The increases to collared base rates are similar to those shown in the 12/31/2014 advisory valuation*

<sup>1</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date

# Collared Pension Net Rates – School Districts

Excludes Retiree Health Care & IAP Contributions

	12/31/2013 <sup>1</sup> 2015 - 2017 Final			12/31/2015 <sup>1</sup> 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>
<b>Collared Base Rate</b>	<b>21.80%</b>	<b>17.19%</b>	<b>20.00%</b>	<b>26.70%</b>	<b>21.44%</b>	<b>24.15%</b>
Side Account (Offset)	(10.62%)	(10.62%)	(10.62%)	(10.26%)	(10.26%)	(10.26%)
<b>Collared Net Rate</b>	<b>11.18%</b>	<b>6.57%</b>	<b>9.38%</b>	<b>16.44%</b>	<b>11.18%</b>	<b>13.89%</b>
<b>Increase</b>				<b>5.26%</b>	<b>4.61%</b>	<b>4.51%</b>

*Rates vary by employer, as only some employers have side accounts*

*Net rate increases are greater than those shown in the 12/31/2014 advisory valuation due mostly to 2015 actuarial investment losses on side accounts*

- <sup>1</sup> For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.
- <sup>2</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date

# School Districts Rate Summary

Weighted Average Rates (Tier 1/Tier 2 and OPSRP)

	2015 - 2017	2017 - 2019	Change
<b>Uncollared Base Rate</b>	<b>20.00%</b>	<b>31.63%</b>	<b>11.63%</b>
<b>Collared Base Rate</b>	<b>20.00%</b>	<b>24.15%</b>	<b>4.15%</b>
<b>Collared Net Rate</b>	<b>9.38%</b>	<b>13.89%</b>	<b>4.51%</b>

- The collared base rate for School Districts is 7.48% of payroll below the uncollared base rate*
- Net rates increased more than base rates due mostly to employer side accounts, which leverage the contribution rate effects of actual biennial investment performance different than assumed*

# Uncollared Pension Rates – SLGRP Average

Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

	12/31/2013 2015 - 2017 Final			12/31/2015 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
Normal Cost	13.66%	7.79%	11.13%	15.78%	8.56%	12.03%
Tier 1/Tier 2 UAL	5.71%	5.71%	5.71%	14.45%	14.45%	14.45%
OPSRP UAL	0.61%	0.61%	0.61%	1.27%	1.27%	1.27%
<b>Uncollared Rate</b>	<b>19.98%</b>	<b>14.11%</b>	<b>17.45%</b>	<b>31.50%</b>	<b>24.28%</b>	<b>27.75%</b>
<b>Increase</b>				<b>11.52%</b>	<b>10.17%</b>	<b>10.30%</b>

*The pool-average collared base and net rates for 2017-2019 are shown on subsequent slides*

*Employer-specific rates vary widely from the SLGRP average*

<sup>1</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.

# Collared Pension Base Rates – SLGRP Average

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2013 2015 - 2017 Final			12/31/2015 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
<b>Uncollared Rate</b>	<b>19.98%</b>	<b>14.11%</b>	<b>17.45%</b>	<b>31.50%</b>	<b>24.28%</b>	<b>27.75%</b>
Collar Limitation	(1.14%)	(1.14%)	(1.14%)	(8.35%)	(8.35%)	(8.35%)
<b>Collared Base Rate</b>	<b>18.84%</b>	<b>12.97%</b>	<b>16.31%</b>	<b>23.15%</b>	<b>15.93%</b>	<b>19.40%</b>
<b>Increase</b>				<b>4.31%</b>	<b>2.96%</b>	<b>3.09%</b>

*The increases to collared base rates are similar to those shown in the 12/31/2014 advisory valuation*

*Employer-specific base rates can vary widely from SLGRP average rates*

<sup>1</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date

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# Collared Pension Net Rates – SLGRP Average

Excludes Retiree Health Care & IAP Contributions

	12/31/2013 <sup>1</sup> 2015 - 2017 Final			12/31/2015 <sup>1</sup> 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>
<b>Collared Base Rate</b>	<b>18.84%</b>	<b>12.97%</b>	<b>16.31%</b>	<b>23.15%</b>	<b>15.93%</b>	<b>19.40%</b>
Side Account (Offset)	(4.99%)	(4.99%)	(4.99%)	(4.70%)	(4.70%)	(4.70%)
SLGRP Charge/(Offset)	(0.80%)	(0.80%)	(0.80%)	(0.82%)	(0.82%)	(0.82%)
<b>Collared Net Rate</b>	<b>13.05%</b>	<b>7.18%</b>	<b>10.52%</b>	<b>17.63%</b>	<b>10.41%</b>	<b>13.88%</b>
<b>Increase</b>				<b>4.58%</b>	<b>3.23%</b>	<b>3.36%</b>

*Rates vary by employer, as only some employers have side accounts and the SLGRP charge/(offset) varies by employer*

*Net rate increases are greater than those shown in the 12/31/2014 advisory valuation due mostly to 2015 actuarial investment losses on side accounts*

1 For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.

2 Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date

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# SLGRP Rate Summary

Weighted Average Rates (Tier 1/Tier 2 and OPSRP)

	2015 - 2017	2017 - 2019	Change
Uncollared Base Rate	17.45%	27.75%	10.30%
Collared Base Rate	16.31%	19.40%	3.09%
Collared Net Rate	10.52%	13.88%	3.36%

- *The SLGRP's collared base rate is 8.35% of payroll below the uncollared base rate*
- *Net rates increased more than base rates due mostly to employer side accounts, which leverage the rate effects of actual biennial investment performance different than assumed*

# System-Wide Rate Summary

Weighted Average Rates (Tier 1/Tier 2 and OPSRP)

	2015 - 2017	2017 - 2019	Change
Uncollared Base Rate	18.18%	29.08%	10.90%
Collared Base Rate	17.46%	20.85%	3.39%
Collared Net Rate	10.61%	14.23%	3.62%

- *System-wide rates are the payroll-weighted average of rates for School Districts, SLGRP, and independent employers*
- *Net rates increased more than base rates due mostly to employer side accounts, which leverage the rate effects of actual biennial investment performance different than assumed*

# Projected 2017-2019 Contributions

(\$ millions)	Projected 2015-17 Payroll*	(A) Projected 2015-17 Contribution	Projected 2017-19 Payroll*	(B) Projected 2017-19 Contribution	(B - A) Projected Contribution Increase
State Agencies	\$5,620	<b>\$575</b>	\$6,020	<b>\$835</b>	<b>\$260</b>
School Districts	\$6,120	<b>\$575</b>	\$6,560	<b>\$910</b>	<b>\$335</b>
All Others	<u>\$7,350</u>	<u><b>\$875</b></u>	<u>\$7,880</u>	<u><b>\$1,165</b></u>	<u><b>\$290</b></u>
<b>Total</b>	<b>\$19,090</b>	<b>\$2,025</b>	<b>\$20,460</b>	<b>\$2,910</b>	<b>\$885</b>

\* Assumes payroll grows at 3.50% annually based on 12/31/2015 active member census, reflecting proportional payroll composition (Tier 1/Tier 2 vs. OPSRP) as of 12/31/2015

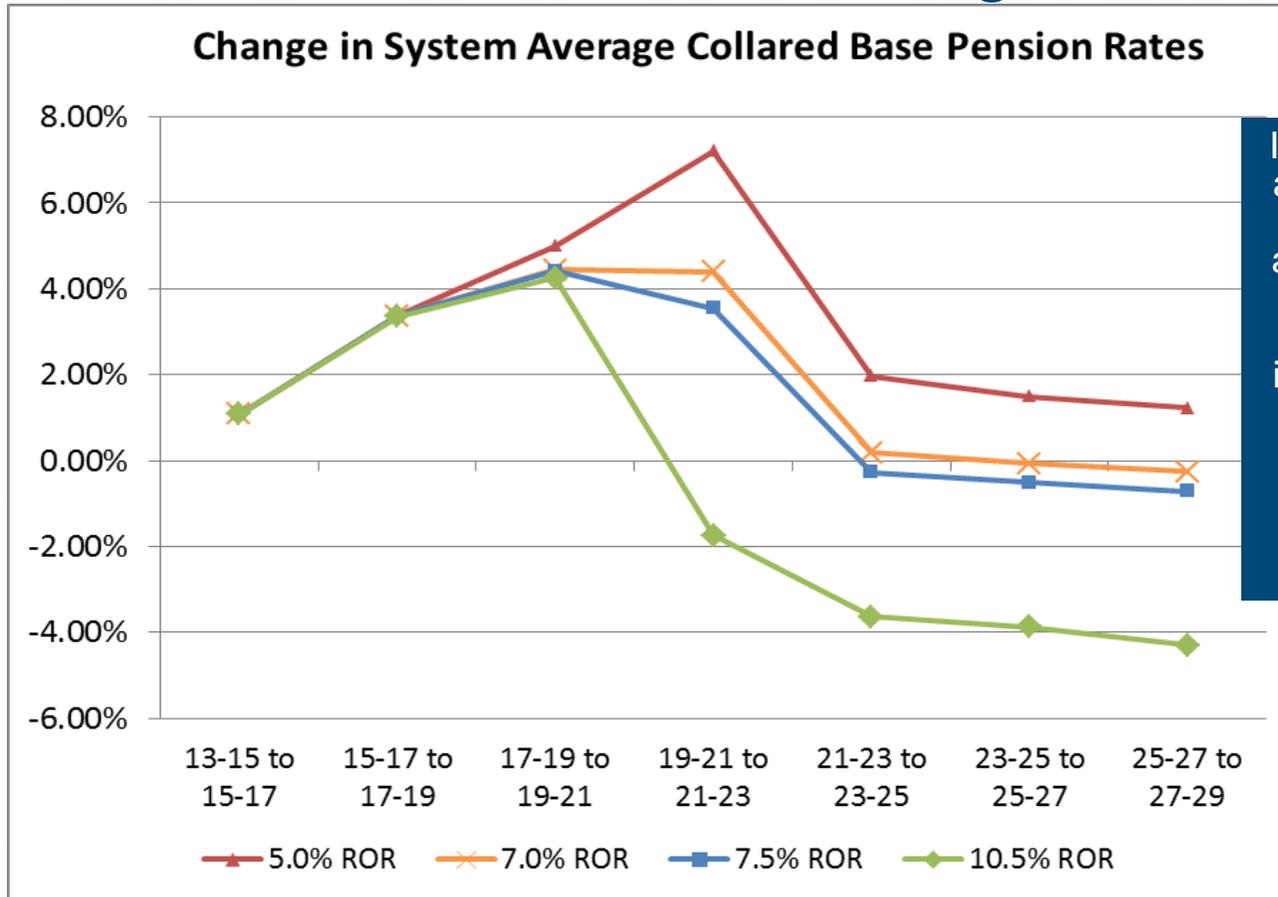
- Collared net rates are used to project 2017-2019 contributions
- The advisory valuation had a projected contribution increase of \$800 million
  - The change from that estimate was caused primarily by 2015 investment underperformance and the leveraged effects that side accounts had on net rates

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# Contribution Increases: November 2015 Financial Modeling

From Nov. 2015 PERS Board materials:

- Based on published returns through October 2015
- Does not reflect \$0.3 billion in 2015 demographic experience losses



If actual investment returns are near assumption, base contribution increases of around 4% of payroll occur in each of the next three biennia, with those increases being necessary to position the system to return to 100% funded status over 20 years if future experience follows assumptions

Shows biennium to biennium changes under steady return projections

# 12/31/2015 Retiree Health Care Valuation

- Two separate health care benefit subsidies are valued:
  - RHIA provides a \$60 per month subsidy toward healthcare premiums for Medicare-eligible Tier 1/Tier 2 retirees
  - RHIPA provides Tier 1/Tier 2 state employees who retire prior to age 65 with an alternative to PEBB coverage until they reach Medicare eligibility
- OPSRP retirees are not eligible for either subsidy
- RHIA and RHIPA benefits historically have been less well funded than Tier 1/Tier 2 & OPSRP benefits
  - To help address that, in July 2009 the Board shortened the shortfall amortization period to ten years to improve funded status over less time
  - Rates reflecting the shorter amortization were first effective July 2011

# 12/31/2015 Retiree Health Care Valuation

- RHIA and RHIPA liabilities combined are less than 1% of the pension liability
- In recent experience studies, we recommended restructuring the RHIPA participation assumption for future state government retirements
  - Assume higher participation rates for retirees eligible for the largest employer-paid subsidies
  - Rates reflecting new structure first went into effect in July 2015
- RHIPA warrants continued monitoring, as funded status is very low and subsidy payments are sensitive to actual participation levels

# 12/31/2015 Retiree Health Care Valuation

## UAL and Advisory Contribution Rates

(\$ millions)	RHIA		RHIPA*	
	12/31/2014	12/31/2015	12/31/2014	12/31/2015
Actuarial Liability	\$468	\$466	\$71	\$68
Assets	\$396	\$419	\$ 7	\$11
UAL	\$72	\$46	\$64	\$57
<b>Funded Status</b>	<b>85%</b>	<b>90%</b>	<b>10%</b>	<b>16%</b>
<b>Normal Cost Rate</b>	<b>0.07%</b>	<b>0.07%</b>	<b>0.11%</b>	<b>0.11%</b>
<b>UAL Rate</b>	<b>0.43%</b>	<b>0.43%</b>	<b>0.39%</b>	<b>0.38%</b>
<b>Total Rate</b>	<b>0.50%</b>	<b>0.50%</b>	<b>0.50%</b>	<b>0.49%</b>

\*State Agencies, OUS, and State Judiciary are the only employers who pay RHIPA rates

***RHIPA assets at year-end 2015 were only about 240% of 2015 RHIPA benefit payments***

# Wrap Up / Next Steps

- Valuation next steps
  - Present employer-specific rates for adoption at September 30, 2016 meeting
  - Issue System-Wide December 31, 2015 Actuarial Valuation Report
  - Prepare employer-specific rate-setting valuation reports
    - PERS distributes to employers

# Appendix

# Certification

This presentation summarizes key preliminary results of an actuarial valuation of the Oregon Public Employees Retirement System (“PERS” or “the System”) as of December 31, 2015, for the Plan Year ending December 31, 2015. The results are preliminary in nature and may not be relied upon to, for example, prepare the System’s Consolidated Annual Financial Report (CAFR). The reliance document will be the forthcoming formal December 31, 2015 System-Wide Actuarial Valuation Report.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System’s staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the System.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan’s funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The PERS Board has the final decision regarding the appropriateness of the assumptions.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System’s funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the plan provisions described in the appendix of this report. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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# Certification

Milliman's work is prepared solely for the internal business use of the Oregon Public Employees Retirement System. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

- (a) The System may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.
- (b) The System may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel. The actuaries are independent of the plan sponsors. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

# Data Exhibits

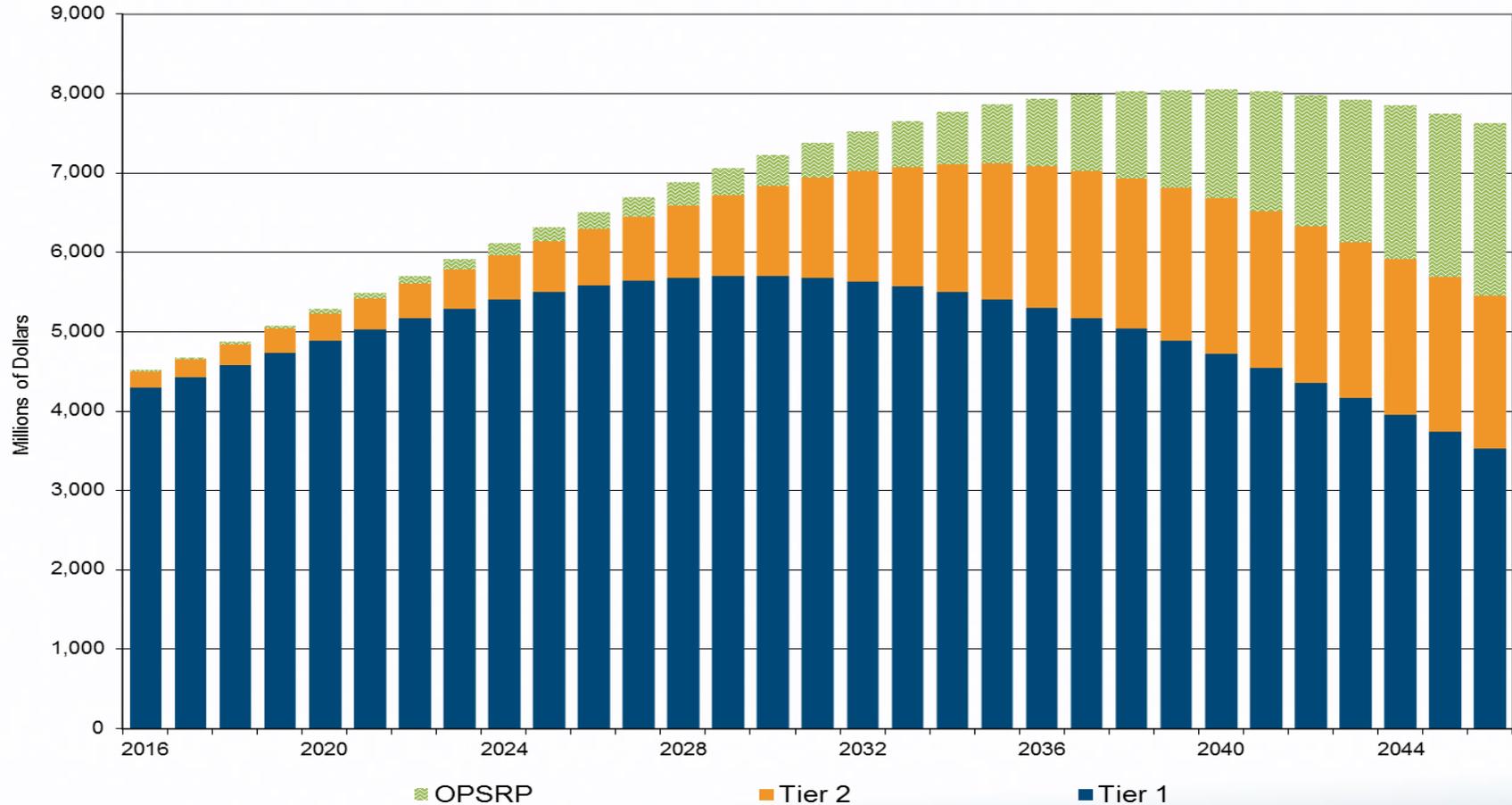
	2015				2014
	Tier 1	Tier 2	OPSRP	Total	Total
<b>Active Members</b>					
Count	30,295	40,126	97,756	168,177	164,859
Average Age	55.5	50.2	42.41	46.6	46.9
Average Service	24.1	15.0	5.7	11.2	11.4
Average prior year Covered Salary	\$ 73,426	\$ 64,481	\$ 46,494	\$ 55,637	\$ 54,323
<b>Inactive Members<sup>1</sup></b>					
Count	15,199	15,589	12,061	42,849	42,563
Average Age	58.3	52.4	46.5	52.8	52.8
Average Monthly Benefit	\$ 2,013	\$ 693	\$ 346	\$ 1,064	\$ 1,138
<b>Retired Members and Beneficiaries<sup>1</sup></b>					
Count	122,117	11,888	2,293	136,298	131,505
Average Age	71.8	66.5	66.1	71.3	71.1
Average Monthly Benefit <sup>2</sup>	\$ 2,652	\$ 975	\$ 405	\$ 2,468	\$ 2,411
<b>Total Members</b>	<b>167,611</b>	<b>67,603</b>	<b>112,110</b>	<b>347,324</b>	<b>338,927</b>

<sup>1</sup> Inactive and Retiree counts are shown by lives within each rate pool. In other words, a member is counted once per purposes of this exhibit, regardless of their service history for different rate pools. This contrasts with the method used to count inactive participants in some of the later exhibits.

<sup>2</sup> The average monthly benefit reflects an estimated adjustment for the effect of the Supreme Court decision in *Moro v. State of Oregon* for records that were not already adjusted in the data provided.

# Projected Benefit Payments

Tier 1/Tier 2 & OPSRP Expected Benefit Payments  
by tier as of 12/31/2015



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# Funded Status and UAL

## Pension Funded Status (\$ billions) at 12/31/2015

	Tier 1/Tier 2	OPSRP	Combined
Actuarial liability	\$72.5	\$3.7	\$76.2
Assets (excluding side accounts)	<u>\$52.0</u>	<u>\$2.4</u>	<u>\$54.4</u>
UAL (excluding side accounts)	\$20.5	\$1.3	\$21.8
Funded status (excluding side accounts)	72%	64%	71%
Side account assets			<u>\$5.6</u>
UAL (including side accounts)			\$16.2
Funded status (including side accounts)			79%

# Uncollared Pension Rates – System-Wide

Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

	12/31/2013 2015 - 2017 Final			12/31/2015 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
Normal Cost	13.18%	7.79%	10.94%	15.07%	8.56%	11.79%
Tier 1/Tier 2 UAL	6.63%	6.63%	6.63%	16.02%	16.02%	16.02%
OPSRP UAL	0.61%	0.61%	0.61%	1.27%	1.27%	1.27%
<b>Uncollared Rate</b>	<b>20.42%</b>	<b>15.03%</b>	<b>18.18%</b>	<b>32.36%</b>	<b>25.85%</b>	<b>29.08%</b>
<b>Increase</b>				<b>11.94%</b>	<b>10.82%</b>	<b>10.90%</b>

<sup>1</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.

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# Collared Pension Base Rates – System-Wide

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2013 2015 - 2017 Final			12/31/2015 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
<b>Uncollared Rate</b>	<b>20.42%</b>	<b>15.03%</b>	<b>18.18%</b>	<b>32.36%</b>	<b>25.85%</b>	<b>29.08%</b>
Collar Limitation	(0.72%)	(0.72%)	(0.72%)	(8.23%)	(8.23%)	(8.23%)
<b>Collared Base Rate</b>	<b>19.70%</b>	<b>14.31%</b>	<b>17.46%</b>	<b>24.13%</b>	<b>17.62%</b>	<b>20.85%</b>
<b>Increase</b>				<b>4.43%</b>	<b>3.31%</b>	<b>3.39%</b>

*Increases that will be effective July 2017 are limited by the collar*

<sup>1</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.

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# Collared Pension Net Rates – System-Wide

Excludes Retiree Health Care & IAP Contributions

	12/31/2013 <sup>1</sup> 2015 - 2017 Final			12/31/2015 <sup>1</sup> 2017 - 2019 Final		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>
<b>Collared Base Rate</b>	<b>19.70%</b>	<b>14.31%</b>	<b>17.46%</b>	<b>24.13%</b>	<b>17.62%</b>	<b>20.85%</b>
Side Account (Offset)	(6.38%)	(6.38%)	(6.38%)	(6.14%)	(6.14%)	(6.14%)
SLGRP Charge/(Offset)	(0.47%)	(0.47%)	(0.47%)	(0.48%)	(0.48%)	(0.48%)
<b>Collared Net Rate</b>	<b>12.85%</b>	<b>7.46%</b>	<b>10.61%</b>	<b>17.51%</b>	<b>11.00%</b>	<b>14.23%</b>
<b>Increase</b>				<b>4.66%</b>	<b>3.54%</b>	<b>3.62%</b>

*Rates vary by employer, as only some employers have side accounts*

*Changes in side account offsets are not collared*

<sup>1</sup> For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.

<sup>2</sup> Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date

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# Actuarial Basis

## Data

We have based our calculation of the liabilities on the data supplied by the Oregon Public Employees Retirement System and summarized in the data exhibits on the preceding slides.

Assets as of December 31, 2015, were based on values provided by Oregon PERS reflecting the Board's earnings crediting decisions for 2015.

## Methods / Policies

*Actuarial Cost Method:* Entry Age Normal, adopted effective December 31, 2012.

*UAL Amortization:* The UAL for OPSRP, and Retiree Health Care as of December 31, 2007 are amortized as a level percentage of combined valuation payroll over a closed period 20 year period for OPSRP and a closed 10 year period for Retiree Health Care. For the Tier 1/Tier 2 UAL, the amortization period was reset at 20 years as of December 31, 2013. Gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over the amortization period (20 years for Tier/Tier 1, 16 years for OPSRP, 10 years for Retiree Health Care) from the odd-year valuation in which they are first recognized.

# Actuarial Basis

## Methods / Policies (cont'd)

*Contribution rate stabilization method:* Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) are confined to a collar based on the prior contribution rate (prior to application of side accounts, pre-SLGRP liabilities, and 6 percent Independent Employer minimum). The new contribution rate will generally not increase or decrease from the prior contribution rate by more than the greater of 3 percentage points or 20 percent of the prior contribution rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funded percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

*Expenses:* Tier 1/Tier 2 administration expenses are assumed to be equal to \$33.0M, while OPSRP administration expenses are assumed to be equal to \$5.5M. The assumed expenses are added to the respective normal costs.

*Actuarial Value of Assets:* Equal to Market Value of Assets excluding Contingency and Tier 1 Rate Guarantee Reserves. The Tier 1 Rate Guarantee Reserve is not excluded from assets if it is negative (i.e. in deficit status).

## Assumptions

Assumptions for valuation calculations are as described in the 2014 Experience Study for Oregon PERS and presented to the PERS Board in July 2015.

## Provisions

Provisions valued are as detailed in the 2014 Valuation Report.

# Blended COLA

## **Moro Decision**

The Oregon Supreme Court decision in *Moro v. State of Oregon* stated that the reduced COLA amounts provided by Senate Bills 822 and 861 (both passed in 2013) only apply to benefits earned after the effective date of the legislation. According to the Court, PERS members who earned benefits before and after the effective date “will be entitled to receive during retirement a blended COLA rate that reflects the different COLA provisions applicable to benefits earned at different times.”

For purposes of the results in this presentation, a member’s blended COLA was based on creditable service earned before and after October 2013. This approach is consistent with OAR 459-005-0510 adopted by the PERS Board in September 2015.

The example below illustrates this blended COLA approach for a member with 30 years of service at retirement, 20 of which were earned prior to the effective date of the SB 861 COLA.

Annual Benefit COLA Applies to:	COLA prior to SB 822 & 861	SB 861 COLA	Blended COLA
<\$60,000	2.00%	1.25%	$\frac{(20/30) \times 2.00\% + (10/30) \times 1.25\%}{= 1.75\%}$
>\$60,000	2.00%	0.15%	$\frac{(20/30) \times 2.00\% + (10/30) \times 0.15\%}{= 1.38\%}$